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Mini and Micro Computer Systems

United Kingdom

U.S. DEPARTMENT OF COMMERCE
International Trade Administration

In the United Kingdom, a projected annual growth of 20 percent in the mini and micro computer market stems from improved price performance ratios, growing customer and worker acceptance of automation, and a high degree of computer awareness. From $3 billion[1] in 1983, sales of minis, micros, and related peripherals are expected to more than double by 1987, when a $6.2 billion market is foreseen (see table 1). The markets for mainframes and larger minis, already well established, are said to be maturing. Sales of these machines are projected to increase only 10-12 percent per annum. By 1987, U.K. computer buyers are expected to spend $880 million on mainframes, $760 million on minis, and $1.3 billion on micros (see figure 1). From less than 15 percent of the computer market in 1981, micros are forecast to grow to 45 percent of the total in 1987.

U.S. firms and their subsidiaries enjoy excellent prospects in the U.K. market. Many American companies made their first export forays into the United Kingdom, and a number of them have established manufacturing operations there or in neighboring Ireland. While strong demand is anticipated for American brand minis and micros, peripherals account for the largest portion of U.S.-source shipments. By 1985, American factories can expect to sell their U.K. customers mini and micro systems and peripherals valued at $1.3 billion (see table 2).

Despite the extensive installed base of minicomputers, this segment of the market retains significant expansion potential, particularly for smaller systems (see figure 2). Sales of **lower level minis** (priced from $10,000 to $50,000) are expected to advance at a 22 percent annual rate to $333 million in 1987 as a result of the growth of computing in small business, commerce, and Government. The availability of quality packaged software and the increasing capability of hardware has made computer solutions to difficult problems accessible to a much broader group of potential users. **Upper level minis** (over $50,000) remain popular for applications ranging from computer assisted design (CAD) and manufacture (CAM) in manufacturing companies to financial systems in banks.

U.K. industry experts characterize the microcomputer market as young and dynamic, with unpredictable growth rates, rapid technological change, and tremendous potential. Purchases of **desktop/business microcomputers** ($5,000 to $10,000) are expected to grow over 30 percent per annum through 1987 as vendors develop the almost untapped business market. Demand is spurred by the availability of suitable software and buyer awareness of the gains offered by office automation. Small

[1] All values are shown in U.S. dollars. Local currency data are converted at the following exchange rates: US$1 = .50 pounds (1980), .543 pounds (1982), and .659 pounds (1983 and subsequent years). Values for years through 1983 are expressed in current rather than constant dollars/prices; values for 1984 and subsequent years are expressed in 1983 constant dollars/prices.

Table 1: United Kingdom.—The Market[1] for mini & micro computer systems[2] 1981, 1983, 1987
(in millions of U.S. dollars)

	1981	1983	1987
Minicomputers upper level			
Production	216	164	273
Imports	182	228	379
Exports	130	134	228
Market size	268	258	424
Minicomputers — lower level			
Production	120	114	197
Imports	100	117	273
Exports	70	79	137
Market size	150	152	333
Microcomputers — desktop/business			
Production	22	49	121
Imports	56	112	334
Exports	8	39	91
Market size	70	122	364
Microcomputers — transportable/professional			
Production	18	56	197
Imports	26	114	379
Exports	8	46	152
Market size	36	124	424
Microcomputers — home/hobby			
Production	30	108	273
Imports	30	79	440
Exports	10	50	182
Market size	50	137	531
Peripheral — auxiliary storage equipment[3]			
Production	142	124	288
Imports	254	490	1,047
Exports	108	162	273
Market size	288	452	1,062
Peripherals — input and output devices[3]			
Production	1,118	1,105	1,912
Imports	824	986	1,730
Exports	690	590	1,017
Market size	1,252	1,501	2,625
Peripherals — data communications equipment[3]			
Production	132	134	228
Imports	146	147	243
Exports	50	50	76
Market size	228	231	395
Totals			
Production	1,798	1,854	3,489
Imports	1,618	2,273	4,825
Exports	1,074	1,150	2,156
Market size	2,342	2,977	6,158

[1] Size of market equals production (ex factory value) plus imports (c.i.f.) minus exports (f.o.b.). Figures include leased equipment counted at its market value as if sold outright in the initial year of lease. Parts are not included.

[2] Computer size is based on purchase price, as follows: upper level minicomputers, more than $50,000; lower level minicomputers, $10,000-$50,000; desktop/business microcomputers, $5,000-$10,000; transportable/professional microcomputers, $1,000-$5,000; and home/hobby microcomputers, less than $1,000.

[3] Excluding equipment sold as components of integrated computer systems.

Source: International Trade Administration, Office of Trade Information Services research report, "The Market for Computers and Related Equipment in the United Kingdom" (see Additional Information box). Figures in this report are based on data gathered in the United Kingdom, including available government statistics, industry reports, and trade source estimates and projections.

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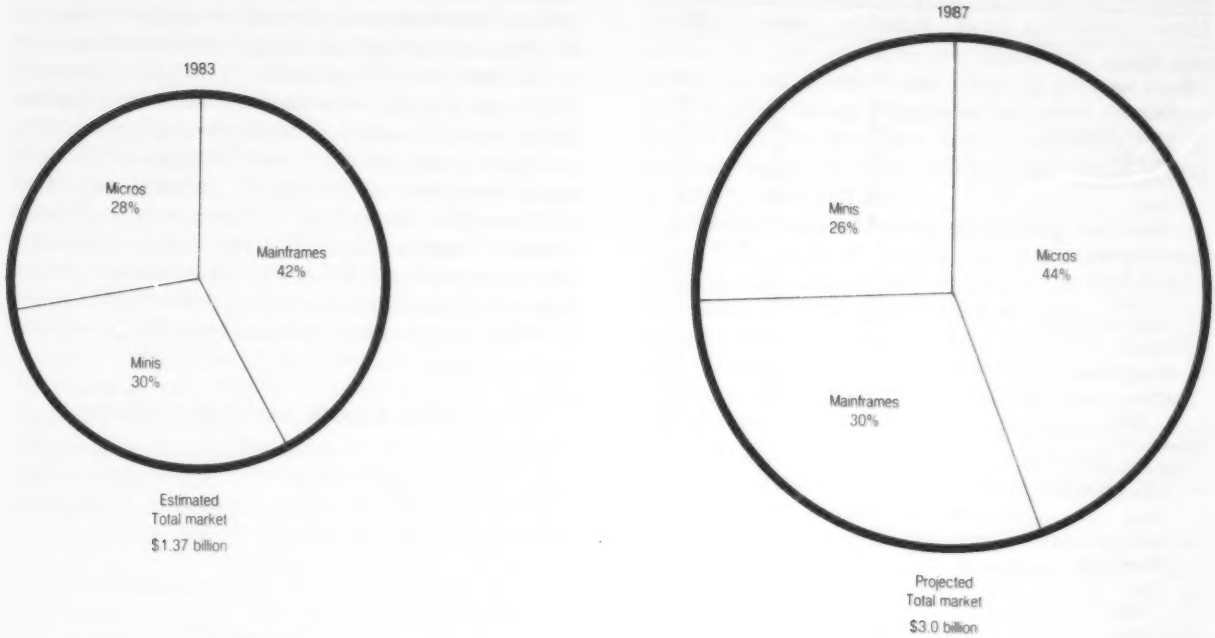
Figure 1
United Kingdom: The computer market—mainframes, minis, and micros
1983 and 1987



Source: International Trade Administration, Market Analysis Branch Research Report.

businesses will also generate much of the market for **transportable/professional microcomputers** ($1,000 to $5,000), which is forecast to advance at a 36 percent annual rate to $424 million in 1987. Purchases of these machines for private use and volume orders from large firms should help keep sales growing swiftly. **Home/hobby microcomputers** (less than $1,000) are almost exclusively used in homes and schools. The United Kingdom's acceptance of these low cost computers has been high in comparison with any other country, therefore, the market is expected to continue its explosive expansion, from $137 million in 1983 to some $530 million in 1987.

The market for peripherals used with minicomputers generallly expands with the market for minis, but the growing sophistication of microcomputer applications is expected to generate above average demand for micro peripherals. Sales of micro add-ons are projected to increase nine-fold from 1983 to 1987 because of the larger initial base of minicomputers, however, mini peripherals are still foreseen accounting for 60 percent of the $4 billion market in the latter year.

Among the three categories of peripherals, sales of **storage devices** expanded more than 40 percent a year between 1981 and 1983, but are unlikely to match that pace over the 1983-87 period. Trade sources expect user requirements for expanded memory capacity to keep sales growing some 24 percent per annum, with lower prices and the heightened popularity of built-in disc drives prohibiting faster expansion. Growth in the market for **input/output peripherals** is projected to average some 15 percent a year, bringing sales to $2.6 billion in 1987. With the increasing use of microcomputers to access larger systems, the need for terminals and individual output devices is expected to decline. **Data communications equipment** is essential to network both micros and minicomputers. Market expansion is projected to average 14 percent a year, from $231 million in 1983 to $395 million in 1987. The relatively slow growth is explained by the inclusion of communications capability, at least for local area networks, in many new computers.

Leading Buyers

Despite a growing volume of purchases by individual consumers and professional, institutional buyers still dominate the market. In 1983, institutions bought all the minicomputers and almost 60 percent of the microcomputers sold in the United Kingdom (see table 3). Rapid growth in micro use is predicted among small businesses, which include institutional sectors (retail/wholesale, insurance) as well as professional buyers (dentists, travel agents).

U.K. manufacturers, accounting for a substantial share of both mini and micro purchases, are by far the largest overall buyers, spending 2.5 times as much as the second ranked sector. Their expenditures in 1983 made up 37 percent of the market for minis and related peripherals, as well as just over 25 percent of microcomputers and peripherals. The U.K. Government has been striving to encourage modernization of industry with a number of incentive schemes, which have accelerated adoption of computer automation. In addition, both large and small manufacturers have

Table 2.—United Kingdom: The market for mini & micro computer systems[1] by leading supplier countries 1981, 1983, 1985

(in millions of dollars)

	1981	1983	1985
Minicomputers			
United States	75	89	120
Ireland	128	148	200
United Kingdom	136	65	76
Germany	30	41	50
Netherlands	14	14	10
Other	35	53	105
Total	418	410	561
Microcomputers			
United States	35	70	110
Germany	16	83	140
United Kingdom	54	78	136
Japan	10	64	150
Hong Kong	—	34	90
Other	41	54	147
Total	156	383	773
Peripherals[2]			
United States	624	810	1,070
United Kingdom	544	561	804
Japan	35	170	300
Germany	87	150	250
Netherlands	17	120	160
Other	461	373	450
Total	1,768	2,184	3,034
Grand Total	2,342	2,977	4,368
Total from the United States	734	969	1,300

[1] Computer size is based on purchase price, as follows: upper level minicomputers, more than $50,000; lower level minicomputers, $10,000-$50,000; desktop/business microcomputers, $5,000-$10,000; transportable/professional microcomputers, $1,000-$5,000; and home/hobby microcomputers, less than $1,000.

[2] Excluding equipment sold as components of integrated computer systems.

Source: See source notation of table 1.

looked to computers, particularly micros, as a way to grow out of the recession without making the long-term commitment of added staff.

The financial and insurance sector, long a major user of minicomputers and mainframes, also purchased some 22,000 micros in 1983. Small to medium sized accounting firms, insurance brokers, and savings and loan associations are spearheading the rapid adoption of microcomputer systems. In addition, Britain's major banks are expected to step up their purchases of microcomputers for use as intelligent terminals, since micros offer local processing capability as well as links to larger computers and networks.

The retail/wholesale sector, which made some 16 percent of minicomputer purchases in 1983, has traditionally been a prominent buyer of minicomputers for sophisticated point of sale (POS) systems and other means of controlling inventory and cutting costs. Small independent retailers have been slow to take advantage of microcomputer technology, and the sector accounted for only 14 percent of spending in 1983. Industry analysis see this as a growth market, however, in light of the 368,000 small establishments that are potential micro buyers.

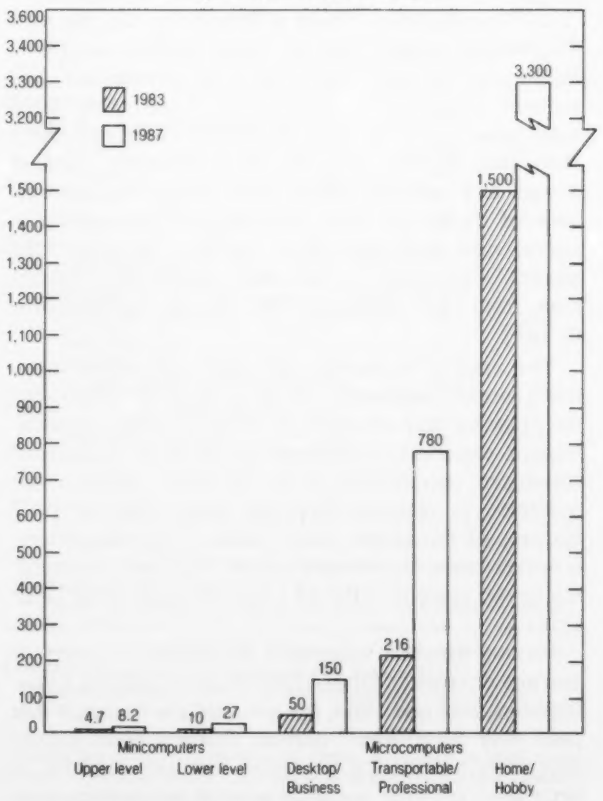
Consumers, on the strength of their microcomputer purchases alone, ranked fourth among all buyer sectors in the mini and micro computer systems market. Almost 8 percent of the United Kingdom's 19.4 million households owned computers by the end of 1983, and predictions suggest market penetration of 22 percent of households by 1987. Consumer awareness of computers has been raised by television series, heavy advertising, media coverage of domestic computer design activities, and Government efforts to make computers accessible to virtually all school children. The Government's Computers in Schools scheme, started in 1981, has also encouraged microcomputer purchases by the education sector. Educational institutions acquired some 40,000 micros in 1983, though many were undoubtedly provided at reduced prices.

Market Trends and Applications

Most categories of minis and micros are used for a broad range of applications. The larger minis perform many of the same functions handled by mainframes: everything from CAD/CAM in industrial plants to

Figure 2
United Kingdom: The Market for Mini and Micro Computer Systems, 1983 and 1988

(in thousands of units sold)



Source: See source notation of Table 1.

financial systems in banks. These machines often handle a variety of tasks. Smaller minis, on the other hand, are frequently installed with the goal of solving a single problem, such as portfolio management, computer assisted engineering, or personnel records. The retail/wholesale sector employs numerous minis for POS transaction processing. Similar installations are expected to be adopted as part of a 6-year, $150 million program to put POS systems in most of the U.K.'s Post Offices.

Microcomputers, especially the larger desktop/business micros, receive the greatest impetus from office automation in the still largely untapped business market. Accounting, financial modeling (spreadsheets), and word processing are among the most popular applications, though these systems serve numerous other uses. Transportation services firms, for example, use micros to control vehicle/freight/passenger movements as well as finances, inventory control, and call routing. The smaller transportable/professional microcomputers handle many of the same applications, but usually serve the needs of professional offices, small businesses, and other small organizations in the United Kingdom. They also provide administrative processing at the department or office level in large Government organizations and corporations. Networking and communications are expected to become increasingly popular applications of these systems.

At the lower end of the micro market, games still account for the largest share (45 percent) of home/hobby microcomputer applications. This orientation to less sophisticated uses is said to reflect the high percentage (almost 40 percent) of home computers purchased as gifts. Educational programs are also popular, and U.K. firms are among world leaders in the creation of educational software. Surveys have revealed that some 45 percent of the main users of home computers are under 18. Many British families now feel that a microcomputer is necessary to provide their children with future access to good schools and jobs.

Implementation of data processing concepts.—Many U.K. users of business micros have still not made a clear choice of centralized or distributed processing. With the proliferation of micros, networking is increasingly common. Many of these networks have grown haphazardly, however, leading to a growing realization of the need for integrated systems. Manufacturers, for example, are stepping up the use of CAD/CAM and see the need to integrate this use with sales, accounting, and inventory control applications elsewhere in the same company.

Computer awareness and training.—The burgeoning market for home computers and the high level of computer awareness in the U.K. can be attributed in part to the efforts of Sir Clive Sinclair, developer of several low cost, mass market computers. The Government, too, has raised awareness and computer literacy with schemes to introduce microcomputers into all secondary and primary schools and with the British Broadcasting Corporations (BBC)

Table 3.—United Kingdom: Expenditures[1] for mini and micro computer systems by major institutional and professional/consumer sectors, 1983

	Minicomputers		Microcomputers	
	Number of units	Value ($ millions)	Number of units	Value ($ millions)
Institutional Sectors				
Government	600	50	4,000	8
Finance and Insurance	1,200	150	22,000	42
Manufacturing	6,500	390	80,000	120
Utilities	300	20	3,000	6
Transportation	400	30	1,000	2
Communications	300	30	3,000	6
Retailing and wholesaling	2,600	170	10,000	10
Health care	400	30	2,000	4
Research establishments	200	20	40,000	20
Research institutions	200	20	4,000	6
Other institutional buyers	2,000	140	31,000	54
Subtotal	14,700	1,050	200,000	278
Professional/consumer sectors				
Physicians	—	—	500	1
Attorneys	—	—	2,300	3
Accountants	—	—	3,300	5
Management and engineering consultants	—	—	400	1
Other Professionals	—	—	6,000	9
Consumer	—	—	1,570,000	176
Subtotal	—	—	1,582,500	195
Total	14,700	1,050	1,782,500	473

[1] Excluding costs of software, hardware maintenance, sales commissions, etc.

Source: See source notation of table 1.

series of programs on computers. Next, the Government intends to extend computer programs to the college level. A Government Computer Board report recommending that 50,000 workstations be brought for the U.K.'s 250,000 university students is expected to result in tender specifications by early 1985.

Computer training facilities for the business and professional market are numerous. Dealers, user groups, software suppliers, consultants, colleges and universities, independent agencies, and institutions and associations all provide training. Many of these offer hands-on experience. In addition to the BBC television and radio courses, consumers have access to a massive industry producing magazines for individual users.

Competitive Environment

Imports amounted to more than three-fourths of the market of mini and micro computer systems in 1983, a share is expected to rise slightly through 1987. Minicomputer sales have traditionally been dominated by foreign-based firms, but in the dynamic microcomputer market, U.K. manufacturers have made significant advances and easily lead all other suppliers in sales of home micros. Over the next several years, however, U.S. and Japanese manufacturers are likely to supplant some of the smaller domestic start-ups as a market shakeout affirms the dominance of well capitalized domestic and foreign-owned suppliers.

U.S. manufacturers supply the market not only with shipments from the States, but also from factories in Ireland, continental Europe, the Far East, and the United Kingdom itself. As a result, import figures tend to understate the role of American manufacturers. For example, while U.S.-sourced imports of minis in 1983 amounted to only $89 million, or 20 percent, almost all the $148 million worth of minis imported from Ireland came from American-owned factories, boosting the actual U.S. share of over 50 percent. Regardless of the location of manufacture, U.S.-brand mini and micro computer systems are expected to continue to sell well. Over the next several years, fastest growth in U.S.-sourced shipments is forecast in imports of microcomputers: some 25 percent per annum through 1985. The largest volume jump, however, is projected in U.S.-built peripherals: from $810 million in 1983 to almost $1.1 billion in 1985.

American vendors get mixed reviews from U.K. buyers. U.S.-supplied equipment and service is said to be excellent, but some companies have run into problems with reliability and inadequate customer support. Selection of a top-notch distributor can forestall many complaints; consequently, good local representatives are at a premium.

The United Kingdom's production of mini and micro computer systems amounted to $1.85 billion in 1983, and is forecast to expand at a 17 percent yearly pace to $3.5 billion in 1987. Input/output peripherals, manufactured at U.K. plants by American hardware companies, account for 60 percent of the domestic industry's output. ICL, the leading U.K. computer company, weakened the domestic industry's clout as a result of its business troubles in the late 1970's and early 1980's. GEC and Computer Technology, two of the remaining mini vendors are the most prominent.

Several of the new ventures that capitalized on the microcomputer boom appear to be in the market for the long run. Sinclair Research, which pioneered the development of the very low cost computer, now subcontracts out manufacture and concentrates on new product development. Acorn, which rode to prominence as the supplier of the BBC microcomputer, focuses on educational applications. ACT has been successful with its Sirius micro, and has recently begun offering the Apricot, which runs both CP/M and MS-DOS.

Third-country imports consist primarily of shipments from overseas plants of U.S. companies and of products manufactured under contract for U.K. and other suppliers. In the minicomputer market, Philips of the Netherlands and Italy's Olivetti are established vendors of medium priced business systems, while Japanese competitors are just beginning to take an interest in the United Kingdom. Japanese vendors have also launched a marketing effort to boost microcomputer sales. Their reputation for high quality consumer electronics could make them formidable competitors with micros, though some U.K. buyers worry about the historic Japanese weakness in software.

Market Access

Marketing channels for mini and micro computer systems vary with the price of the system. At the top end, minis are sold through original equipment manufacturers (OEMs) or directly to the final user. Purchases of minicomputers by the industrial sector follow the traditional pattern of tender invitations submitted to well known suppliers.

Medium priced micros are most commonly sold through systems houses, software houses, individual retailers, and traders. Together these dealers account for about 85 percent of sales by volume and over 90 percent by value.

Home computers and the cheaper professional models are generally marketed through retail chains, which are estimated to supply almost 70 percent of the consumer market. Some of the larger department stores, notably W.H. Smith, have opened up specialized computer outlets, and compete directly with such computer stores as the U.S.-franchised Computerland.

Access to the U.K. market is easy, with only a 6 percent tariff on non-EEC products. Value added tax amounting to 15 percent is added to domestic

production as well as imports. Nontariff barriers are said to be nonexistent, with open bids the rule even for Government purchases.

Technical standards are covered by a series of British Standards that often, but not always, agree with international and other European standards. However, compliance with British Standards does not guarantee acceptance by the Health and Safety Executive, which is responsible for equipment safety. In practice, American safety standards are likely to be satisfactory. Potential suppliers are encouraged to contact the British Standards Institute, 2 Park Street, London W1.

Electrical supply in most of the United Kingdom is 240 volts AC, 3 wire single phase, 50 Hz. It differs only in Northern Ireland, where 230/240 volts is standard. Although the United Kingdom has adopted metric standards, buyers appreciate quotes and specifications that include imperial as well as metric measurements.

Additional Information

The project officers responsible for Country Market Profiles on Mini and Micro Computer Systems are:

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The Profile summarizes a 57-page International Market Research (IMR) report prepared by Knight Wendling Limited in the United Kingdom under contract for the U.S. Department of Commerce and reflects the opinions and views of interviewees in the United Kingdom and not those of the Department of Commerce. The IMR report gives considerably more detail on all the points touched upon in the Survey, as well as marketing practices, trade regulations, technical standards, and the names and addresses of potential agents and distributors, trade associations, and trade publications.

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